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MEDELSSOHN'S MUSIC FOR PIANISTS.

SOME months ago, there appeared in *THE ETUDE* an article signed "Old Maid," in which, besides challenging some of the opinions previously expressed by an editor of that journal, the writer made some pointed inquiries in reference to the estimate placed upon Mendelssohn's piano-forte music by the pianists and thinkers of our day. She asked that a reply be made through the columns of *The Etude*, by some one of its editors. Having watched in vain for such an answer, I undertake it, in lieu of any other champion, and will cut down the giant let at once by saying that I agree abjectly and heartily with the favorable opinion of Mendelssohn's piano music expressed by the writer in question. In direct reply to "Old Maid" I would say that the general opinion among leading musicians to-day, in reference to all Mendelssohn's work, seems to be unfriendly, or at best, indifferent and patronizing.

In Cincinnati we have a musical microcosm, including all the shades of opinion. Mendelssohn's compositions are seldom heard here in concerts, either of artists or pupils. Miss Gail plays his concerto in G minor occasionally, and with that inimitable grace which characterizes all her performances; but the only one of our theorists and composers who is a staunch, out-and-out Mendelssohnian is Prof. Chas. Batens, of the College of Music, while John Broeckhoven and Otto Singer are enthusiasts of the new school.

After once listening to a refined performance of Mendelssohn's imperishable masterpieces, "The Rondo Capriccioso," in company with George Magrath, one of Cincinnati's foremost pianists, I was amazed to hear him say "I don't care much for that composition; it is too languishing and sentimental." "Well, well!" I thought, "do gushful non-disputandum." How any sane man, woman or child can find the delicious melody, and broad, clear harmony of the introduction, or the sparkling playfulness and dignified grace of the two themes of the Rondo either languishing, or trivial, or too sweet, or in any way less ideal music in every respect, transcends my comprehension. The "Songs Without Words" of Mendelssohn are admirable compositions, written in a form, which, if not entirely novel, has certainly as much of that precious element, originality, as you will find in any compositions throughout the range of piano literature; they are, indeed, the best possible introduction to classical form which a student can receive. Many of them are admirable technical studies. No. 1, for singing with running accompaniment; No. 2, for wrist; No. 4, for broad chords and small interlaced melodies; No. 6, for dreamy tone-color and rapid effects; No. 18, for thumb-study; No. 20, for the fifth and fourth fingers of the right hand; No. 30, for short arpeggios and skips; No. 34, for fingering in close chromatic positions and breathless agility, besides many others equally beautiful. It is, I believe, not the custom of all piano teachers, but I make it an invariable rule to require the study of Mendelssohn's "Songs Without Words" at a certain pace of my piano curriculum. Certainly, in no sense am I the enemy of progress in art, nor would I in the slightest minimize the vast services rendered to orchestral and dramatic music by Richard Wagner; but is not just as well to stop and ask ourselves whether our constant culture of elaborate dissonances may not be a retrograde step toward barbarism? May it not be an approach to the state of that Chinaman who thought the tuning of the orchestra the finest thing in the concert, when our ears begin to reject all pure and direct harmonization as rapid?

Possibly, after one has drunk "diminished sevenths" to intoxication, drugged himself with "suspensions," narcotized himself with "augmented fifths" and "sixths," glistened his taste with the burning spices of "major sevenths" and gormandized upon the prickly "leading-tone seventh," any pure liking of tonic triad and dominant seventh may savor of "sugar water." One is reminded of that confirmed tippler who laid a heavy wager that he could recognize any beverage blindfolded. He was taken up. The first he quickly pronounced a good

THE ETUDE.

brand of beer, the next was champagne, then port and sherry, so on through a long gamut; but at last he hesitated, tried again, and gave it up. It was water.

JOHN S. VAN CLEVELAND.

THREE CLASSES OF PUPILS.

THERE are three classes of pupils everywhere, and these are the teacher's greatest possible annoyance, since their native ideals are placed so low.

CLASS I.

THE COUNTRY ORGAN SCHOLAR.

Who comes in once a week, and is easily recognized by the huge instructor which she carries under her arm. This book is her cherished companion for two reasons: One, the polite young organ agent made her a present of it when her father purchased the organ; another, she has already taken a term or so in it with her home teacher. In response to her inquiries as to her advance, she replies confidently that she has taken to the fifteenth page.

It usually requires from fifteen to twenty minutes of strong argument to convince her that she should "take" on the piano for a while to improve her technique. "And what is that?" "That means to limber up your fingers," we explain half-apologetically, for using such large words. She says she never tried a piano, but she is willing. We are forced to believe the first part of her assertion when she sits down and begins to pump the pedals organ fashion.

Having explained briefly that this pedal exertion is unnecessary, she is at last ready to "take her lesson." The hour flies. She has assimilated a couple of two-finger exercises. What shall we do? The next pupil is waiting. We arise. "Is that all? Am I done?" And such an imploring look and such a sigh of disappointment as she meekly murmurs, "Excuse me, but I didn't quite understand. I hoped you might give me a pretty piece. Am I to use my instructor?" Shall we frown or shall we smile? What shall we do? And a harder trial comes when, at the close of the term, this same illiterate specimen asks for a certificate to teach.

CLASS II.

THE MARRIED LADY.

Who is about to embark on the musical sea just to "see" if she cannot learn a couple of pieces to please or to appease her domestic lord. Sometimes the lord is opposed to all such nonsense, and the lady must steal her musical recreation and pay for it out of her allowance. Our fingers are too few to enumerate the actual cases of this kind that have fallen under our observation.

These cases are not hard to manage for the teacher. The lady that has sufficient ambition and grit to run such a hazard and make such a sacrifice has usually some sense and enthusiasm for art, and oftentimes makes an admirable, interesting student. But from the very nature of her surroundings she is forced to limit her practice, and then she often falls back to "get along faster" owing to her rapidly advancing age. Here, though, is the case of a wife who has been in the kitchen and garden scrubbing and digging for a quarter of a century, trying to aid in keeping the ship afloat, and, at last, through patient and consistent industry, prosperity has insured the remaining voyage of the craft so securely that Jonathan makes up his mind that Mary Ann shall enjoy a little leisure and luxury in their latter days. They talk it over; Mary used to play before they were married. It is soon decided. They must have a piano. It is ordered and set up, and the next day the friendly old pair, arrayed in the best attire, call to make arrangements for a quarter's brushing-up of Mary's dusty musical memories.

SCENE 2. "We are sorry, madam," Nellie Gray and "Bonnie Doon" are fine songs, and we should be pleased to hear you sing and play them. But you must remember you are out of practice, and your fingers are what we might call—ahem—a little inflexible. Your voice, too,

will doubtless improve by use. Be content to practice a few scales, and at the same time take a few lessons on deep breathing and the various pitches to improve your voice, and in a short time Mr. Jonathan will have the satisfaction of "Oxymoron" as she interrupts, sharply, "I've inflected" using scales for the last twenty years, weighing everything brought into the house, from a pound of coffee to a quarter of mutton. I tell you I am tired of scales. And as for deep breathing, why I've nearly exhausted myself a million times climbing that steep pitch that leads down to the spring below the house. I've done the same thing a hundred times since picking up when Jonathan was short of help. Jonathan would object, I know, to these things; for he says I shall not work any more outside of tending to the dairy and housework, and he wants me to spend much of my time at music. You understand?" We understand.

CLASS III.

THE BOARDING-SCHOOL MISS.

Who has just graduated and returned home to make her debut in society. In other words, to play her part in the opening scene of the tragic-comedy known as cap-teaching. Her head is filled with a very little French, a lingering hatred of her school mistress, a scornful remembrance of her former music teacher, notions of dress and fashion, a passion for open carriage, the New-Yorker and Progressive Enquirer, and what not. Her tongue flies almost with electric rapidity. Mamma is preparing a grand reception, and the Elite Club are to give a ball; and young and dashing Charlie is to be the cavalier at one place, and the aristocratic, superb witch, Willie, is to officiate as escort (à la mode) the next time; and so the rattles follow. Mamma wants her accomplished to be sure. Both Charlie and Willie adore music. Charlie goes into raptures over the lancers, but Willie adores Strauss above every body. "By the way, Professor, have you heard the latest opus by Jacobini, called—let me see, I can't quite recollect—but there are two names in it that are just too utterly adorable to mention. One is the dream, and the other is a waltz; and Willie, who just ought to look at him when he hears this waltz! He can't keep still."

These are the tough cases,—the cases that seem hopeless, and indeed, usually are hopeless. There is little use in nailing one's brains to find ways to hold such pupils,—that is, if other pupils can be obtained, and they can. A teacher to be successful must select such pupils as will not absolutely shock him to such a degree that he begins to suspect he has lost his identity, that he is dreaming, or that he has been transported to New Zealand. If one could have philosophy enough to just feel that he was on some South Sea Island, he would be more satisfied with the results he gets. The bird trainer is delighted if the parrot learn a single sentence to repeat each week. Why can't we get our ideas down, away down, and be content with what we get, since more is impossible? D. DE F.

A REVIEW LESSON.

Let the teacher ask his pupils what they know of the piano compositions of the following composers. What of their biography; what each represents in the development of art, etc., etc.

CLASSIC.

1. Bach, 2. Handel, 3. Haydn, 4. Mozart, 5. Beethoven, 6. Mendelssohn, 7. Von Weber, 8. Schubert, 9. Schumann, 10. Chopin, 11. Raff, 12. Liszt, 13. Liszt, 14. Thalberg, 15. Scharwenka, 16. Morawski, 17. Gade, 18. Reinecke, 19. Kullak, 20. Greig, 21. Bennett, 22. Fuchs, 23. Haydn, 24. Clementi, 25. Henselt, 26. Jaell, 27. Jensen, 28. Merkel, 29. Berd, 30. Gottschalk, 31. Dussek, 32. Rheinberger, 33. Brahms, 34. Niccolò, 35. Saint-Saens, 36. Tschai-kovsky.

MODERN.

1. Ascher, 2. Behr, 3. Boehm, 4. Dupont, 5. Gohlbach, 6. Heller, 7. Jangmann, 8. Ketterer, 9. Kube, 10. Lang, 11. Lechner, 12. Lohr, 13. Lydberg, 14. Oesten, 15. Schulhof, 16. Smith, 17. Spindler, 18. Richards, 19. Leeschhorn, 20. Derand, 21. Dorn, 22. Krug, 23. Loebe, 24. Wollenhaupt, 25. Mills, 26. Mason.

MUSICAL ART COMPANY.

We have identified ourselves with the interest of the above Company, which has been recently reorganized. This enterprise will in no way interfere with our present work. The publications of the Company will be merged into our own. We will give them equal prominence with our own. The advertisement of the Company on page 32 will give full information regarding incorporation, etc. Our patrons who desire to invest in a share or a number of shares are under no risk whatever. The shares are convertible at any time into music published by the Company or our own publications. With our patrons, the investment is nearly the same as credit on account, that the Company may declare from time to time. The shares can be obtained from us, which are sent direct from the office of *THE ETUDE*.

Perhaps the greatest inducement we offer to music teachers to become shareholders is the fact that both the Company's publications and our own will be sold at a large discount to all these holding shares. A list of pieces now published by the Company is printed in this issue. Full information can be had by writing to us.

Some four years ago, Mr. Robert Goldbeck issued the first number of the "Musical Art Publications," which at once met with a cordial reception on the part of the musical profession.

The object was to place on record, in printed books and music, the *three graduating courses*, as he happily termed them, of piano, the voice and harmony, for the benefit of teachers and students.

It is not too much to say that Mr. Goldbeck undertook them a great and difficult task, one requiring much knowledge, perseverance and method to describe and explain fully all that is needed to guide the student from the first step of rudimentary knowledge, supported by vocal or instrumental technique, to mature judgment, executive ability and independence of conception in the interpretation of music.

A series of books which embody such instruction and training, such command and method to describe and explain fully all that is needed to guide the student from the first step of rudimentary knowledge, supported by vocal or instrumental technique, to mature judgment, executive ability and independence of conception in the interpretation of music.

There is everywhere a demand, very naturally most strenuously insisted upon by those who have spent faithful years of arduous study, that professional musicians and teachers should be capable and well informed, to stem the flood of mischief done by those who, unprepared, invade the field legitimately belonging to the trained teacher merely for the purpose of making a living. But where (arises the grave question) these are unprepared teachers to receive better training? There are thousands who cannot leave their homes to study with distinguished, but alas! too costly teachers. To these and to all others Mr. Goldbeck comes to lend them, most effectively, a "labor of love." We feel very sure that such "love" on the part of the author will be rewarded by the friendship of the profession, high and low, from a variety of motives. *The Etude* has, from the start, taken a similar stand, and gladly joins hands, efforts and forces in a cause which is entirely sympathetic and of a kindred nature.

With this object in view the editor of *THE ETUDE* has accepted the Vice-Presidency of the Musical Art Stock Company, of which Mr. S. B. Mills, the famous pianist, is the President and our honored Dr. William Mason one of the Trustees. We wish Mr. Goldbeck success in a cause which is also peculiarly our own, and herewith most cordially give it our earnest "God-speed."

ARCHITECTURE has been termed frozen music, and the Gothic-pointed arch may be called a frozen figure; no art form embraces such consciousness within itself.—EHLERT.

THE ETUDE.

A NEW DEPARTMENT IN THE ETUDE.

With the next issue of *THE ETUDE*, we will commence a new department, or, rather, we will enlarge a department already existing. Many of the questions sent in answer require an amount of space not properly to be given them in a correspondent answering column. To meet this need, and in order to form opportunity for the most useful discussions for various mail questions belonging to teaching, we will open a department of "Letters" to teachers. The topics will be chosen by Mr. Mathews, who will have charge of it, and be treated according to his own fancy, subject, of course, to the limitations of good taste and truth. Into this department will be put all such answers to correspondents as from their general character are likely to become interesting to a large part of our readers. It would be affectionate to deny that the success of a similar series under the facile pen of the editor of our contemporary, "Brainard's Musical World," has had its influence in determining the selection of this mode of treating the subjects we have in mind. It is not a plagiarism, however, which we commend, but an example of causing two blades of grass to grow where only one grew before. Dr. Karl Mear has been and still is of great use to a large and constantly widening circle of teachers and readers. Those who know Mr. Mathews, however, do not need to be told that, owing to his peculiar equipment as journalist and practical teacher in one of the largest and most metropolitan cities in America, he has at command a very large store of information about music, and a wide range of progressive ideas, which in no other way can so easily be opened up to the service of teachers less experienced and less fortunately situated. It is for such that the new department will be opened. In conducting it we shall not consider it a fatal element in a question proposed that it is old; on the contrary, the old questions are the most troublesome ones, which every wrestling with does something to bring nearer a true solution.

It goes without saying, moreover, that the interest of this department will largely depend upon the interest our readers may take in it, in the practical way of sending in such questions as come up in their own experience, and which they do not find means of solving in the books or authorities at hand. On his own part, Mr. Mathews pledges the readers of *THE ETUDE* to use his best efforts to give every question sent him the fairest consideration in his power, and to add thereto the best information that he can in any way come by. The opening letter of the series will appear in our next issue.

AN excellent valuable material is found in the Question and Answer columns of this issue of *THE ETUDE*, where our readers enjoy the benefit of the knowledge of two erudite and experienced musicians, Dr. William Mason and Mr. J. H. Cornell, both practical teachers, both specialists, equally beloved and respected by the profession.

Both have become identified with this department of *THE ETUDE*. The latter has answered all questions relating to theory and history since the October issue, and the former has in the past answered some questions consisting of the writer will be attached to the answers. Where no initials appear, the managing editor will usually be the responsible one.

It is hoped that those who cry "Licht, Mehr Licht!" will seek assistance through *THE ETUDE* only when their own resources and powers are exhausted, and then frame the inquiry in plain and definite language.

THE offer to send the set of "The Musician," (6 vols.) will hold good till the 28th of February, when the last grade will be ready. Until then they can be purchased for \$2.50 per set, 25 cents extra for mailing.

In this issue we print the essay of J. C. Fillmore on "The Practical Value of Certain Modern Theories Respecting the Science of Harmony." For clearness and conciseness of diction, this essay is a model literary production. The subject matter is of great interest to all concerned with the study of music. Some of the ideas presented are bound to be incorporated in our system of harmony. We advise our readers, and teachers in particular, to acquaint themselves with the results of the researches of Helmholtz, Harnemann, von Ottinger, Riemann and others. The main features or drift of these modern ideas are given in the most interesting manner in this essay of Mr. Fillmore. The author lectured on this subject at the Boston meeting of the M. T. N. A., and gave a short blackboard illustration, as there was not time to present the subject as is here given in *THE ETUDE*.

The ideas embodied in this essay appear natural and logical, and are not opposed to accepted truths in musical science, but are rather new developments of them.

We have all been taught that a sound is composed of one fundamental tone and a series of uniform upper or over-tones. The modern theories are based on the supposition that every tone is the centre of sound vibration, which goes downward as well as upward, and that the upward series produces the major and the lower the minor, analogous to positive and negative electricity.

We urge most earnestly on all teachers to read this essay, which does not require an extended knowledge of theory to understand its meaning.

After reading the essay, it should be followed up by "Nature of Harmony," by Riemann, and then by "New Lessons in Harmony," by Fillmore, which is now almost ready for delivery.

If these ideas are of interest to a sufficient number of our constituency, we will present more of the writings of these modern theorists.

The following is an extract from a humorous letter to Mr. E. Penzo from Moritz Moszkowski, in answer to a request for his autobiography:—

"I took my first step before the public in my earliest youth, following my birth, which occurred Aug. 23d, 1854 in Breslau. I selected this month in honor of the month of a tornado, which always plays so prominent a part in the biography of great men. This desired tempest, in consequence of favorable weather, did not occur, while it accompanied the birth of hundreds of men of much less importance. Embittered by this injustice, I determined to avenge myself on the world by playing the piano, while I continued to Dresden and Berlin as Kullak's pupil. In spite of the theoretical instruction of Kullak and Wuerst, a lively desire to compose was only aroused in me. I perpetrated, in time, an overture, a piano concerto, two symphonies, piano and violin pieces, songs, etc.; in short, I have twenty works in print.

"I should be happy to send you my piano concerto but for two reasons:—first, it is worthless; second, it is most convenient—the score being four hundred pages long—so I am making my piano stool higher when I am engaged in studying better works.

"My prominence as a pianist is known to you. I have concertized in France and Germany, and am to go again to Berlin, where they are at work, day and night (by electric light), preparing my triumphal arch and a procession of virgins in white.

"Besides these extensive acquirements, I can play billiards, chess, dominoes and violin, can ride, imitate canary birds, and relate jokes in the second dialect of a very witty, amiable man and your very devoted friend and colleague.

MORITZ MOSZKOWSKI."

THE complete work of art must reveal itself in ideal beauty and purity, and always be founded on truth of character and graceful expression of form.

MAX is so variously and miraculously organized that he can be acted upon by all forces and receive delight in all forms. He is an instrument with an infinite number of pipes and strings to be played upon by all forces in the material and spiritual worlds, to vibrate in unison with them and with each other and with the harmony is happiness.—RAY, CRAWFORD GILES.

THE teacher can only teach that pupil who teaches himself.—H. S. V.

that our present minor key is a "major-minor" or "dur-moll" key, modified from pure minor as his "moll-dur" is from pure major. But this conception could not be reached until the reciprocal relations of pure major and minor had been fairly recognized. Hauptmann was aided as his predecessors had been, and as nearly every one continues to be, by the supposed necessity of an ascending leading-note in the minor key. But von Oettingen soon saw that the consistent carrying out of the dual principle involved a descending leading-note in pure minor. The major scale, constructed of the tones of a major tonic, Over-fifth and Under-fifth, $F-A-C-E-G-B-D$ is thus made up: $C-D-E-F-G-A-B-C$. Von Oettingen proceeded to construct a pure minor scale, made up of the tones of a minor tonic, Over-fifth and Under-fifth, $E\flat-G-A\flat-B\flat-C\flat$. This scale turned out thus, reading downward instead of upward in the order of pitch: $C-B\flat-A\flat-G\flat-F\flat-E\flat-D\flat-C$. In the order of tones and semitones, this scale is the exact counterpart in under-intervals of the major scale in over-intervals. So it is in its principal chords and its natural cadence formula. For, since it has a descending leading-note, the under-fifth chord which contains this note is the natural chord to lead to the tonic at the close. So that whereas, in the major, the natural cadence formula has the chords in the order 1. Under-fifth, 2. Over-fifth; 3. Tonic; in the pure minor the natural cadence-formula has the order 1. Over-fifth; 2. Under-fifth; 3. Tonic; thus:—



Melodically and harmonically, therefore, as well as mathematically and acoustically, this scale is the reciprocal of the major.

According to von Oettingen, then, there is implied in our tonal system the following four kinds of keys:—

1. Pure major, made of a major Tonic, Over-fifth and Under-fifth, thus:—
 $F-A-C-E-G-B-D$.
2. Mixed major (Hauptmann's "Moll dur"), made up of a major Tonic and Over-fifth and a minor Under-fifth, thus:—
 $F-A\flat-C-E-G-B-D$.

This key, though not acknowledged in current text-books of Harmony, is numerously exemplified in actual practice. Hauptmann points out that it occurs wherever the Diminished Seventh Chord resolves into the major Tonic. ("Natur der Harmonik und der Metrik," p. 46.)

To give one example: the second subject of the first movement of Beethoven's Sonata, Op. 2, No. 1, is in the key of $A\flat$ major minor; i. e., it has a minor sub-dominant. This subject is made up of the Dominant Seventh Chord with an added minor 9th resolving into the major tonic. If the root were omitted, it would leave the diminished seventh chord, exactly the kind of case instanced by Hauptmann.

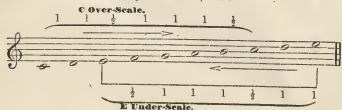
3. Pure minor, made up of a minor Tonic, Over-fifth and Under-fifth, thus:—
 $E\flat-G-A\flat-B\flat-C\flat$.

This key is neither acknowledged in current theory nor employed in the actual practice of composers. It is, however, rationally conceivable, and there is no apparent reason why it should not be added to the resources of musical expression.

4. Mixed minor, made up of a minor Tonic and Under-fifth and a major Over-fifth, thus:—
 $E\flat-D\flat-F-A\flat-C\flat-G$.

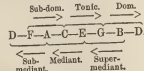
This is the minor key in common use.

Von Oettingen further called attention to the parallel relations between each major key and the pure minor key which begins on its third. The pure minor scale of $E\flat$, for example, read downward, of course has every tone in common with the major scale of C , thus:—

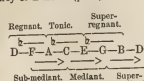


The chords of the two keys are also identical, thus:—

1. Chords of the key of C major:—



2. Chords of the key of E minor (pure):—



In these diagrams I have anticipated one point of later nomenclature which is to be attributed to Dr. Riemann, and have also used two new technical terms of von Oettingen's which need explanation. I have already called attention to the fact that, in pure minor, the under-fifth and not the over-fifth is the cadence-making chord, because it contains the descending leading-note. But the term "Dominant" has been so long exclusively borne by the over-fifth that a new term corresponding to it seemed to be needed to indicate the governing chord in pure minor. So von Oettingen invented the terms "Regnant" and "Super Regnant" for the Under-fifth and Over-fifth chords, respectively, in pure minor, as being the reciprocals of "Dominant" and "Sub-dominant" in pure major. Riemann further applied the terms "Mediant," "Sub-mediant," and "Super-mediant" to the chords beginning on the third of the Tonic, Under-fifth and Over-fifth, respectively, whether in pure major or minor.

In pure major, the three principal chords are major, and the three mediant chords are minor. In pure minor, the three principal chords are minor, and the three mediant chords are major. These six chords are the only (consonant) ones that can be made from the scale itself.

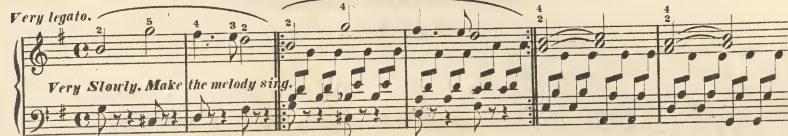
In the case of parallel keys, the chords of the two keys are identical; the principal chords in the major key are the mediant chords in its parallel minor, and vice versa. The key relationship depends solely on their grouping and relation to a given chord as tonic. If the tonic is a major chord, the key is major; if the tonic is minor, the key is minor. In both cases the very same six chords are used. This is a point of great weight and importance. Let me emphasize it, and repeat that key depends not on the chords employed, but on their relation to the tonic chord. I shall have to recur to this further on.

Here we may dismiss von Oettingen for the present, and occupy ourselves with the ideas of still another distinguished theorist, Dr. Hugo Riemann, of Hamburg.

(C) Riemann's Theories.—Dr. Riemann was, and is, I believe, a professor in the Conservatory of Music, at Hamburg. Some ten years after von Oettingen's system of Harmony appeared, he began publishing a series of remarkable pamphlets on musical theory. These were all based on the work of Hauptmann, Helmholtz and von Oettingen, whose fundamental principles he accepted.

1. It had been objected to von Oettingen's theory of the minor chord that we do not actually hear the undertone series in complex tones as we do the overtone series; that they can be heard only when there are other sounding bodies free to vibrate in sympathy with given tones; that, consequently, the overtone series is ordinarily heard to the exclusion of the undertones, and that, even when the undertones are actually present, they are overborne by the overtone series. This struck Riemann as a weak point in the theory,—it was a point, in fact, which led Helmholtz to refrain from accepting von Oettingen's conclusions,—and so he (Riemann) began to investigate this particular point. The result of his study seems to be that while it cannot be proved that the series of undertones is always present as an objective fact in the complex sound-wave which reaches the ear, and while it must be admitted that the undertone series, even when objectively present, is generally fainter than the overtone series which is also present at the same time, yet that Helmholtz's hypothesis regarding the functions of the nerve fibres in the ear makes it extremely probable that we do hear, in every tone, not only the overtones, but also the undertones, the combination, or resultant tones, both those resulting from the principal tones and also those resulting from the numerous combinations of overtones and undertones, and beside these the beats resulting from the tones which are dissonant to each other. In short, he concluded that every tone we hear is not only complex, as Helmholtz's proved, but is much more complex than Helmholtz was aware of. The quality of the tone, as Helmholtz has already shown, depends on the relative proportions of the elements of which the complex tone is made up; only these are elements which Helmholtz did not take into account, that make the predominance of the undertone series some-

Aside from the singing melody in the Soprano, the principal difficulty of this piece lies in the triplet accompaniment, which is divided between the two hands in such a way that the right hand is apt to forsake the melody for the last tone of the triplet. The preparatory exercise is designed to prevent this. Learn without pedal.



"FROM STRANGE LANDS AND PEOPLE" Schumann's "Scenes from Childhood" Op. 15, No. 1.

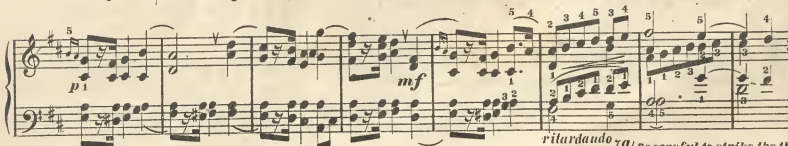


Play small note D at the decap, in place of the large B of the melody.



"A CURIOUS STORY."

From Schumann's "Scenes from Childhood" Op. 15, No. 2.



*. Use the Pedal with every chord after the Exercise has been thoroughly learned. Be careful to strike the three notes D G A exactly together. Studies in Phrasing. Matthews.

MIDDLE GRADE TECHNICAL EXERCISES.

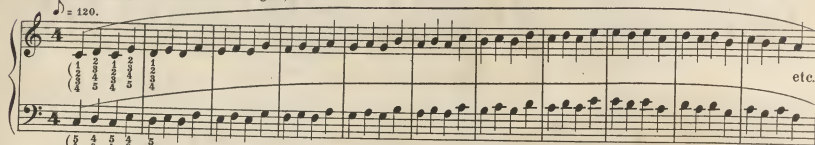
Normal position Exercises.

PART I.

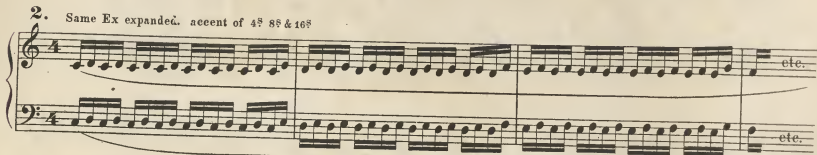
1. 2 finger Exercise.

With overlapping touch (extreme Legato) Note 1.

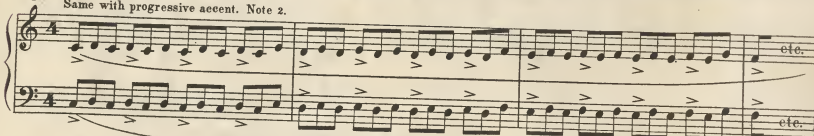
C. P. Hoffman.



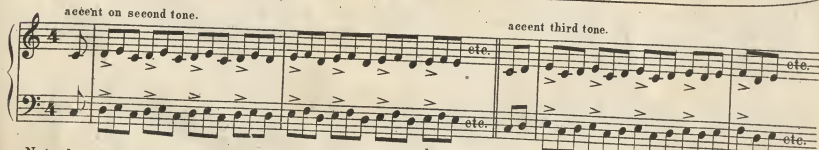
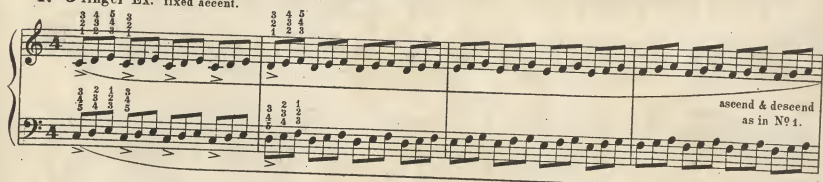
2. Same Ex expanded. accent of 4th 8th & 16th



3. Same with progressive accent. Note 2.



4. 3 finger Ex. fixed accent.



Note 1. Play this Exercise and Nos 9, 10, 32, 39 and 42 so that each is held through just one half the time of the following Note, constant.

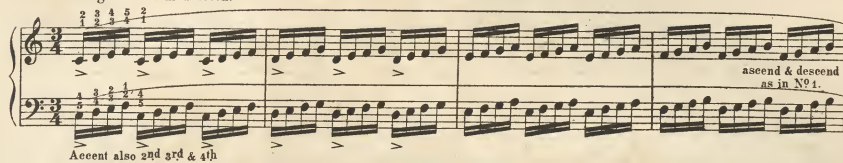
Note 2. That is, when the accent passes in continuous succession from finger to finger. Accent with a free finger, the arm loose but quiet.

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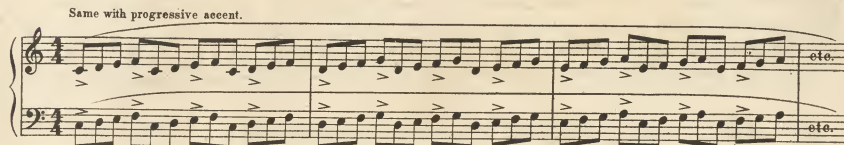
5. Same with progressive accent



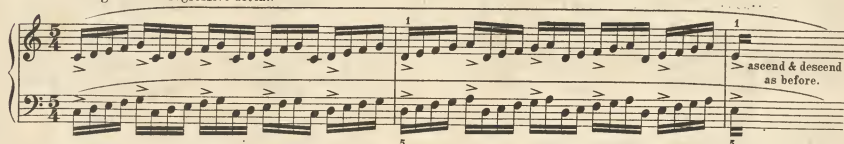
6. 4 finger Ex. Fixed accent



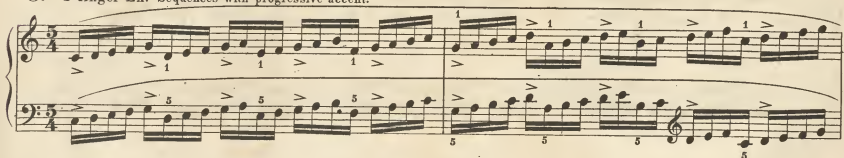
Accent also 2nd 3rd & 4th



7. 5 finger Ex. Progressive accent.



8. 5 finger Ex. Sequences with progressive accent.



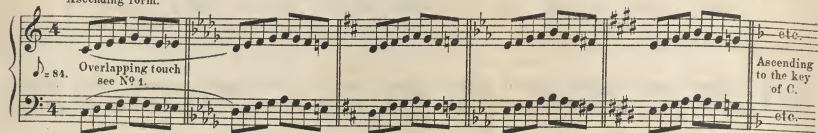
All the above should be played also in D^b and in D or B.

Normal Position Touch and Rhythm Exercises.

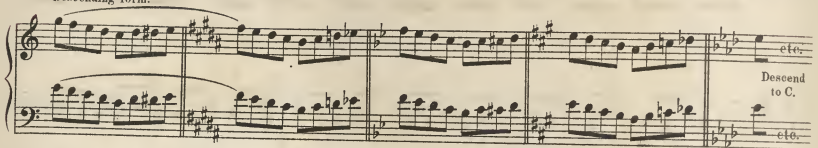
PART II.

9. Modulating 5 finger Ex. Major Pentachord.

Ascending form.

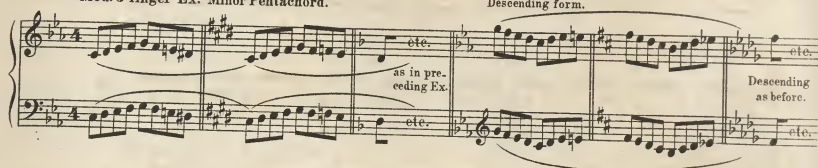


Descending form.



10. Mod. 5 finger Ex. Minor Pentachord.

Descending form.



11. Expanded form (Note 3). Tempo Comodo.

Practise 1st Legato both hands.

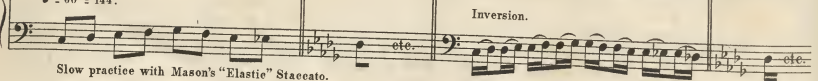
" 2nd Staccato "

" 3rd Legato one hand, the other Staccato.



12. Elastic Staccato and Legato.

♩ = 60 = 144.



Slow practice with Mason's "Elastic" Staccato.

Fast practice, Staccato with a slight backward movement of the fingers.

Note 3. Nos 11 to 15 inclusive should also be practiced with the minor pentachord, No 10.

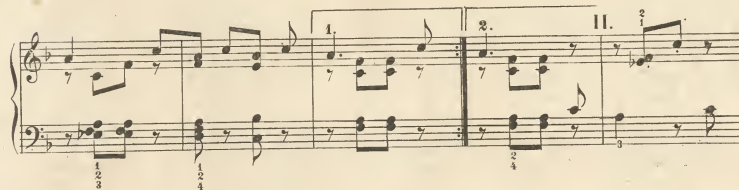
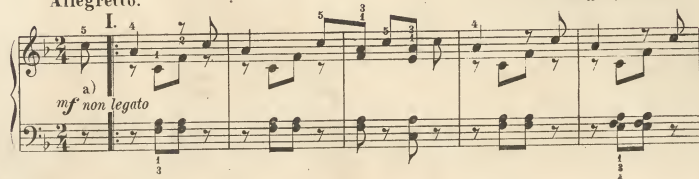
KUCKOO IN THE FOREST. Kuckuk im Walde.

My pretty, dear Cuckoo,
Say would you listen kindly,
And be my prophet too,
And give to all I ask you,
An answer plain and true.

Now should you, thank you kindly,
My pretty dear Cuckoo,
Fly back into your wood again,
No more I ask of you!
Adieu, adieu, my pretty, dear Cuckoo!

Allegretto.

G. T. Wölff, Op. 25 No. 5.



a) Non legato means a very light staccato, not a sharp pointed effect. Every thing is to be played in this manner, except the tones especially marked staccato or legato.

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cresc. *p* *Ped.*
 III *ff* *p*
poco cresc.
f
dim. *pp*

TARANTELLE.

THEODORE MOELLING.

Presto.

p *f*
f
f
p *f*

a tempo

f
sempre dim. e rall.
pp
molto cresc.
f
cresc.
con fuoco
ff

Interlocking Exercise.

43.

p
rall
f
mf
pp rall
p
pp
f
p a tempo
accel.
rall
pp

MAJOR SCALES.

The Major Scale consists of two tetrachords (each of two whole steps and one halfstep) separated by a whole step. C, D, E, F, — G, A, B, C. In transposition, the upper tetrachord of any scale becomes the lower tetrachord of the next succeeding scale.

C Major.

5 Left hand octave lower.

G Major.

D Major.

A Major.

E Major.

B Major.

F# Major.

D# Major.

A# Major.

E# Major.

B# Major.

F Major.

The Scales B, F# and D# are called "Enharmonic", as each may be written in a different way, using a different signature.

HARMONIC MINOR SCALES.

In the Harmonic Minor Scales, which serve as basis for harmonic formations, the 7th is chromatically raised a half-step. The third and sixth form minor intervals with the tonic or starting note.

A Minor.

E Minor.

B Minor.

F# Minor.

C# Minor.

G# Minor.

D# Minor.

Bb Minor.

F Minor.

C Minor.

G Minor.

D Minor.

The Minor Scales G#, D# and Bb (Enharmonic), in their fingering, conform to that of their Relative Majors (those having the same signature), while all the others are fingered like their Tonic Majors (those having the same starting note).

carefully observed. The accompaniment needs to be done very quietly.

FROM MOZART'S SONATA IN C
(Peters' Edition.)

17.

Andante. *ten.* *ten.*

p *f* *dol.* *p* *f* *decresc.* *p* *f* *sfz* *p* *sfz* *f* *Interlude.* *mf* *p* *pp* *ten.* *p* *ten.*

Studies in Phrasing Mathews.

times possible, and that make the minor chord quite as satisfactory and justifiable a phenomenon as the major chord, instead of being, as Helmholtz imagined it, a disturbed major chord. Of course, this is difficult, and, perhaps, impossible, to verify; but so is Helmholtz's original hypothesis, of which this is merely a slight extension. At least, it is a good working hypothesis, and seems to have satisfied Riemann.

2. Riemann made some very thorough historical studies and wrote a history of Musical Notation. In the course of these researches he came upon some remarkable facts.

It had already been pointed out that the pure minor scale was identical with the Dorian, the favorite scale of the Greeks. Riemann discovered that the Greeks thought this scale *downward*, just as von Oettingen proposed to think it. At least their notation of it, using letters of the alphabet, just as we do, and reading them *backward*, would seem to point distinctly to that conclusion. Moreover, although the medieval theorists who adopted the Greek notation of the Greek scale thought it upward, some of the lowest of their melodies began at the top of the scale and ended with the lowest note, using the descending leading note before the tonic.

I give here a single example, the choral, "Christus, der uns selig macht" from 12 Bach chorals, published by Ditson & Co.

Handwritten musical notation for the song 'The Rose Tree'. The music is written on four staves, each with a treble clef and a common time signature (C). The melody is simple and consists of eighth and quarter notes. The lyrics are written below the staves: 'The Rose Tree', 'The Rose Tree', 'The Rose Tree', and 'The Rose Tree'. The handwriting is in a cursive style, and the paper shows signs of age and wear.

This choral is made from the following scale :

A pure minor or under-scale, beginning on F above and closing on F below, with a pure minor cadence. Bach's harmony is a different matter. He had not the least conception of pure minor harmony. His harmony is the church "Phrygian," as then understood.

The natural harmonizing of this scale would be as follows :

Handwritten musical score for 'The Rose Tree'. The score is written on two staves, Treble and Bass clef, in G major (one sharp) and 2/4 time. The melody is in the Treble staff, and the accompaniment is in the Bass staff. The piece consists of 8 measures. The lyrics are written below the Treble staff.

The Rose Tree

Handwritten musical score for 'The Rose Tree'. The score is written on two staves, Treble and Bass clef, in G major (one sharp) and 2/4 time. The melody is in the Treble staff, and the accompaniment is in the Bass staff. The piece consists of 8 measures. The lyrics are written below the Treble staff.

The mediæval theorists not only misunderstood the Greek writers on whose works they sought to base their labors, but even misapplied their scale names, so that the Greek "Doric," for one example, became the church "Phrygian." In short, mediæval theory is one maze of confusion. No wonder that it has taken so long to base our own theories on rational principles.

Riemann discerned, further, that the musical system of the Arabs and Persians was a pure minor one. They divided a string into twelve equal parts, and used one of these parts as a unit of measure. The other tones of the system were simple multiples of this, up to 12. This makes the simple undertone series, of which the minor chord is composed, the highest tone being the starting-point. He found these facts in the works of a Persian theorist dating at the end of the thirteenth and the begin-

ning of the fourteenth century of our era. (See Geschichte der Notenschrift, p. 77.)

Riemann found, also, that the conception of the dual relations of the major and minor chords was not new, even to Christian mediæval theory. Zarlinò, an Italian theorist, published a work in 1658 in which he founded the minor chord on the under-tone series, using multiples of a prime number as the basis of the series. The major chord, on the other hand, he proposed, was based on the over-tone series, using fractions of a string. Riemann satisfied himself that the reason why Zarlinò's idea proved unfruitful and was consigned to oblivion was, that the "through-bass" system came into vogue just about that time, and that the minor chord was then regarded *downward*. The figured bass system was at that time a practical necessity. The system of musical notation was still so undeveloped that a score for an organist was impossible. His only resource was to put the four parts over each other, as they are in the hymn "The Church's One Foundation." Riemann found that the other way made with it. He *had* to think his combinations of tones upward and not downward. So that the failure of Zarlinò's idea to make its way was due, not to anything irrational in the idea itself, but to an accident of history. The time was not yet ripe for the kind of thinking which Riemann was doing. It was not until Hermann Ramanus established the same ideas some two centuries later. The truth seems to be that all these theorists, of widely separated times and nationalities, discovered, each for himself, real natural facts and principles having a most important bearing on the relation of the major and minor chords. But the discovery came to nothing simply because the fullness of time had not yet come.*

Thoroughly convinced of the rationality of the dual conception of harmony and of the major and minor scales as well, Riemann set himself to solve the problems involved in bringing them into practical use. Von Oettingen has already done much in this direction. Riemann accepted much of his work, modified some of it, extended it a good deal, and worked it out into a practical system of harmony. This system included thinking chords, intervals, scales, and keys, and it was based on the major triad, which he considered as the basis of all music. He also made many changes in the manner of nomenclature, and adapting the rules for the preparation of voices to the changed conditions. To go into all these matters in detail would involve a complete review of his whole system; and this could not be done within the limits required of this paper.

It must suffice here to point out some of our own relations to his work. To begin with, the problem of nomenclature is not quite the same for us as for German theorists. For example, the Germans know nothing of "major" and "minor" scales, keys and chords. They use the terms "dur" and "moll," "hard" and "soft," so that they can with less difficulty refine these terms when they have reversed their modes of thinking for the "moll" system. But our terms cannot reasonably be retained. If we are to look on a so-called "minor" chord, for example, as having a natural and perfect fifth, just as a major chord has, only reckoning from the upper note instead of the lower one, the terms "major," which means "greater," and "minor," which means "less," are not rationally applicable. One third is neither greater nor less than the other. They are just alike, only one is an over-third and the other an under-third. Besides, if we are to reckon the chord C—A♭—F, for example, from C, its true point of unity, we can no longer call it the chord of F minor, nor can we call it the chord of C minor, for that would be both irrational and confusing. It is really the under-chord of C, just as E—B—F is the over-chord of C. The simplest way for us, therefore, is to discard the terms "major" and "minor" altogether, and adopt the terms "over-interval" and "under-scale," "over-key" and "under-key," "over-interval" and "under-interval," "over-chord" and "under-chord."

I have only space to suggest one modification of the current rules for the progression of voices consequent on the new ideas. It is an accepted rule that the seventh in a chord is to descend one degree. But in the under-keys the seventh chords are reckoned downward, and their natural resolution is upward. Take, for example, the Regnant Seventh chord in E under-key; it will be resolved thus:—

on This is only one of many changes needed

Whether all this is *practical* or not is a question to be settled by experience. Those who are convinced of the validity of the new conceptions, and those others who are not yet fairly convinced, but see enough probability in them to demand further consideration, can test the matter for themselves. I can say for myself that I became familiar with the new

* See "The Nature of Harmony," by Dr. Riemann. I have lately translated it, and it is published by Theodore Presser, of Philadelphia.

ideas and methods some years ago, and have ever since applied them in my harmony teaching, both in the writing of exercises and in analysis. I have found no marked gain in simplicity and in comprehensibility that I think it impossible ever to return to the methods in which I was trained, and which I used during no small part of a lifetime. I find it impossible to deny the validity of von Oettingen's discoveries and of his conclusions. The facts are really there, founded in the nature of things, in the mathematical and acoustical relations of tones. The rational, and consequently the practical, way, is to fit our theories to the facts. Further, I find it much simpler and easier to test our present minor as a *mixed* key, modified from the pure under-key. Thus treated, it becomes perfectly comprehensible, and all the confusion heretofore prevalent is at once removed. I have found little difficulty, even at middle age, in spite of long habits, in learning to think intervals and chords downward, and my pupils find none at all. So far as my experience goes, there is absolutely nothing impractical in applying the new ideas. On the contrary, there is great gain.

II. TONALITY AND MODULATION.

The old idea of key was confined to the tones of the scales. The tonic or keynote was held to be the central tone of the system; its point of unity and only the tone of the scale was thought of as real elements of the key. Passing notes, or hy-tones, or chromatic alterations might be admitted without disturbing the center of gravity; but to use a chord containing a tone foreign to the key, especially a chord constituting an important element in another key, was to shift the point of unity altogether. This was especially true of the major chord with a minor seventh—the Dominant, or cadence-making chord. Add to the tonic a minor seventh and it became at once a Dominant seventh; the tonic was changed in standing to the under-tonic, no matter if every other chord of the whole period belonged to the original key. Under this way of looking at key, "transient modulations" were of the commonest occurrence.

But how about modern harmony? There were passages in Beethoven, in Schubert, in Schumann, in Chopin, which were extremely puzzling, if we have to look on every chord foreign to the scale as introducing a more or less decided change of key. But Wagner! What was to be done with such an arch-heretic? On what rational grounds could we account for a continuous succession of chords, hardly any two of which were to be found in the same scale? Abuse him, of course. Call him names. Say that he had no fixed key from one end of an opera to another. Deny his harmony all claims to being based on rational, intelligible principles. And yet, somehow, "Faustmänner" and "Lohengrin" made their way and grew on the public. The younger generation of music lovers, especially, seemed to find Wagner's successions of chords just as satisfactory as anybody's, even if they could not explain them on any principles which had been taught them. List, too, was another stumbling-block. He had no more a settled keynote, in the ordinary sense of key, than Wagner himself.

The solution of the puzzle is really very simple, and for it we are indebted mainly, if not wholly, to Dr. Riemann. In the first place, we must admit that, with the new conception of tones as complex, and with the increased importance of harmony in proportion to melody, the tonic chord rather than the tonic note has become the centre of gravity of the tonal system. Nowadays, we can hardly think the tonic at all without including the chord in the sense of key.

Next we must admit that the tonic chord remains tonic until some other is decisively substituted for it. And it takes a good deal more than it used to force upon us the sense of a new tonic. In the first place, as exemplified above in the case of the parallel overscale and underscale, the question of tonic is not one of what chords are used, but of grouping and relation. When this principle is once admitted our whole ground is shifted. We do not ask concerning a chord "Does it belong to the scale?" but "Is it so related to our present tonic that it can be used here without forcing on us the sense of a new tonic?"

In the next place, it must be admitted that the two fifth-chords are not the only ones primarily related to the tonic. In the practice of the composers on whose works current theory is mainly based, these two chords hold unquestioned supremacy. But even Beethoven and Schubert began to divine the significance and close relationship of the chords of the over-third and the under-third. In Wagner's practice these two take their places beside the two fifth-chords as equally justified, and as holding a relationship equally close and intimate. The chords of the over- and under-sixth are hardly less important. Go through almost anything of Wagner's or Liszt's, and the prominence of third and sixth relationships will be surprising to any one who has heretofore looked on fifth relationships as having exclusive validity.

It is too late to deny Wagner his place among great masters of harmony. Henceforth, theory which would not lag a half century behind the time must explain Wagner's practice; must demonstrate the validity of his principles and expand them.

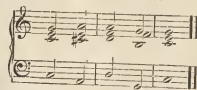
The underlying principles which justify Wagner's harmony and make it perfectly comprehensible are two: 1. The one already announced, that any and every chord belongs to a key which can be so used as not to force on us the sense of a new tonic; and, 2. That every conceivable chord is so related to every conceivable tonic. This will seem to many an astounding statement, but I believe it can be shown to be strictly true. Let me illustrate. Let C be the tonic chord, i.e., we admit the validity of the third and sixth relationships, as we certainly must, we have at once six overchords primarily related to the tonic—the chords of the over-third, over-fifth, over-sixth, under-third, under-fifth and under-sixth. Each of these has a note in common with the tonic chord, i.e., some one note of the tonic chord is either first, third or fifth of each of these six chords. But such note of the tonic chord may also be first, third or fifth of an underchord; so that, allowing for duplicates, there are six underchords primarily related to the tonic.

The following table exhibits this clearly:—

A. Over-Chords of the Tonic			B. Under-Chords Related to C-4		
Under:	Over:		Through C-4	Through E-2	Through G-2
6th 3rd 2nd, 1st 3rd 6th.					
E F A F C G E A	C C C C C C C C	(C) (C) (C) (C) (C) (C)	(C) (C) (C) (C) (C) (C)	(C) (C) (C) (C) (C) (C)	(C) (C) (C) (C) (C) (C)

But each of these chords has also six overchords and six underchords primarily related to it. Since there are only twelve overchords and twelve underchords in the whole tonal system (counting, of course, harmonic chords as identical), there will be numerous duplicates, and all the chords not primarily related to C-4 are of the chord A-F-D, which, i.e., the relation will be as close as is that of the chord A-F-D, which belongs in the scale. And what is true of C-4 is, of course, true of every other chord used as a tonic, whether it be an overchord or an underchord. Each and every chord of the whole chromatic scale is a component of each and every key, whether overkey or underkey. The question of key, I repeat, is not one of what chords are used, but of how they are used; it is a question of grouping and relation.

If these principles be admitted, our ideas of modulation are modified at once. The new conception of tonality is so much broader and more inclusive than the old one, that much that we have formerly looked on as "transient modulation" becomes a mere emphasizing of primary relations, or, at most, the introduction of secondarily related elements. Thus, for example, the mere introduction of the chord D-F-A in the key of C does not necessarily involve a change of tonic to D-F; it may merely serve to emphasize the Dominant chord without shifting the centre of gravity. This may even be true when this emphasis continues for a whole phrase or clause. Any other primarily (or even secondarily) related chord may be similarly emphasized without forcing on us the sense of a new tonic. The following passage would formerly have been held to contain a "transient modulation" into D minor:—



Whereas we have simply, 1. Tonic; 2. Overchord of the over-third; 3. Underchord of the over-third; 4. Dominant seventh; 5. Tonic. There will be cases where the opinions will differ, and each one must decide for himself whether a given passage is more easily intelligible when looked on as belonging to the original key or as related to a new tonic. But, in general, the new idea of key will so modify our conception of modulation, that we shall find fewer cases which we must regard as real changes of key. We shall confine our sense of change of key to cases where a new tonic seems to be firmly established for a considerable length of time; where the centre of gravity is so shifted that we must regard the change as comparatively permanent.

The natural place to apply and test these ideas is in the analysis of the harmonies of Wagner and Liszt. Whoever will do this will find them sources of real enlightenment.

THE PRACTICAL VALUE OF CERTAIN MODERN THEORIES RESPECTING THE SCIENCE OF HARMONY.*

BY J. C. FILLMORE.

The practical value. I emphasize the adjective, because we are here not specially as scientific investigators, but as practical teachers; and scientific theories concern us primarily only as they conduce to make our teaching more practical. If it can be shown that this or that theory is actually based on rational principles, then we shall find it of real practical value to us. For only that teaching is really practical which expounds and applies principles and laws found in the nature of things; this alone is rational and permanent. The question for us is, therefore: Have there been any real discoveries of natural principles and laws not yet generally accepted and applied? If so, what are they, and how can we put them to real practical use, so as to simplify our teaching and make it more rational and intelligible? The object of this paper is to suggest an answer to these questions, so far as the subject of Harmony is concerned. I am decidedly of the opinion that such discoveries have been made, and that they are of immense practical value. The principles which I hope to make clear relate: (1) to the Minor Chord and Minor Scale and (2) to Tonality and Modulation.

I. THE MINOR CHORD AND MINOR SCALE.

(A) Moritz Hauptmann's *Theories*.—Some thirty-three years ago, Dr. Moritz Hauptmann, of Leipzig, published a work called "Die Natur der Harmonik und der Metrik," a work so full of profound insight into the true nature of harmonic relations, so vigorous in its philosophic thinking, and so suggestive, that it marked an epoch in the development of the theory of music. One of the most notable and suggestive portions of the work is that which treats of the minor chords, and this is the point which mainly concerns us at this time. Hauptmann called attention to the fact that the interval of the minor chord on which its unity is conditioned is not the first, as in the major chord, but the fifth. In the major chords, according to Hauptmann, the first, or lower tone, is the formative one, on which the unity of the chord is conditioned. It has a third and a fifth, dependent on it, growing out of it. In the minor chords the conditions are reversed. The third and fifth do not grow out of the first (or lower) tone, are not dependent on it. The fifth, or upper tone, is a third and fifth; is fifth of the lower tone and third of the middle one. In Hauptmann's view, the third (that is, the major third), fifth and octave were the only intervals that could be considered directly intelligible. All other intervals he derived from these. The relation of major thirds to the conditions of the third and fifth of the minor chord. In the major chord, the conditions which determine the unity are active—the root has a third and a fifth. In the minor chord, the conditions which determine the unity are passive—the upper note is a third and a fifth. The two chords are, therefore, reciprocal, counterparts, polar opposites. He points out, also, that this reciprocal relation is not only valid as regards their respective points of unity, but also as regards their numerical proportions and their characteristic emotional expression. The numerical proportions he lays down for the intervals of the major chord as $\frac{4}{3} : \frac{3}{2} : 2$; those of the minor chord as $\frac{5}{4} : \frac{3}{2} : 2$. The major chord, he thinks, rises upward; the minor droops downward. He compares the latter to a weeping willow; the former to a tree whose branches point upward. The characteristic expression of the major chord, he thinks, is boldness, upward striving, aspiration, forceful activity. That of the minor chord is rather heavy-heartedness, depression, melancholy, passive submission and endurance.

It seems never to have occurred to Hauptmann that the real point of unity of the minor chord might also be its real generator. He saw no reason, apparently, for thinking the chord downward instead of upward. He does, indeed, insist that the tone C is not only the point of unity of the major chord C-E-G, but also of the minor chord F-A-C-flat, and points out their reciprocal relations. But it seems not to have occurred to him that the minor chord as well as the major might be named from the tone on which its unity is conditioned; that intervals can be thought downward as well as upward; that it is really just as truly a major third downward from C to A-flat as upward from A-flat to C, and just as truly a fifth from C down to F as from F up to C. But this was, perhaps, more than was to have been expected. All honor to Hauptmann for the free, suggestive, vigorous thinking which made further advance possible. He opened the way and pointed out the direction in which others were to go farther than he did or could. It was an inevitable consequence of his discoveries about the minor chord that they should lead to others. Thinkers were to come who would accept his views so far as they went, but who would not be able to stop with his conclusions. Once admit that the unity of the minor chord is determined by its upper tone

and not its lower one, and it is only a short step to the conception of a chord under-chord, the perfect reciprocal of the major or over-chord—a chord consisting of an under-third and under-fifth as the major chord does of an over-third and an over-fifth.

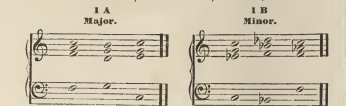
(B) Von Oettingen's *Theories*.—This step was decisively taken, some thirteen years later, by Dr. Arthur von Oettingen, Professor of Physics in the University of Dorpat. In his "Harmonie-system in dualer Entwicklung," published in 1866, he strongly insisted on the dual nature of harmony, the dual, reciprocal relations, not only of the major and minor chords, but of the major and minor scales. Von Oettingen had the great advantage of profiting by the acoustical discoveries of Helmholtz, whose speech-making work was published in 1863, three years before von Oettingen's book. Helmholtz not only carried the theory of overtones further than it had been carried by any of his predecessors, but also the theory of undertones, which involves the minor chord as the overtone series does the major chord. This undertone series is a result of the phenomenon of sympathetic vibrations, and Helmholtz called attention to it incidentally in his chapter devoted to the latter subject. A resonator held to the ear, he points out, will sound whenever any tone is given of which it is an overtone. If the strings of a piano are left free to vibrate by raising the dampers, and any given tone be sounded, all these strings will vibrate sympathetically, of which the given tone is a common overtone. Von Oettingen perceived, as Helmholtz did not, the harmonic significance of this fact. He points out that every conceivable tone is the central point of unity, not only of its overtone series, but of its undertone series as well. Thus, for example, the tone c' (middle c), is not only the point of unity for the series of overtones c', c'', g', e', e'', g'', etc., which form the major chord, but also that of the undertone series c', c, F, G, A-flat, B-flat, etc., which makes the minor chord. The reciprocal acoustic relations of the overtone and undertone series are paralleled by their mathematical relations.

The vibration numbers of the overtones are represented by simple multiples of the vibration number of the original tone; those of the undertones by simple fractions of it. If we represent the vibration number of the central tone by 1, the ratios of the overtone series to it will be 1:2:3:4:5:6, etc.; those of the undertone series will be 1:1/2:1/3:1/4:1/5:1/6, etc. That is, the first overtone of which the complex tone is made up will be produced by twice as many vibrations as the fundamental tone of the series; the second overtone by three times as many, and so on; while the first undertone will have only half as many vibrations as the original tone; the second one-third as many, and so on. Von Oettingen goes on with an elaborate mathematical treatment of the subject, for which I have no space here. Those who are interested in it must be referred to the book itself. He also pointed out that every tone of the overtone series belongs not only to the central tone as component, but to all the tones of the undertone series, and that this is true of no other series of overtones. And, reciprocally, the whole undertone series has not only the central tone as a common overtone, but also all the other overtones of the series, and this is true of no other series of undertones. In general terms, any given tone is the central point of a system in which it is the highest tone that includes all its overtones as components, and the lowest common overtone of its undertone series. The first five of its overtones make up the major chord. The first five of its undertones make up the minor chord. It is, mathematically and acoustically, the point of unity for both. Of course, neither the overtone nor the undertone series stops with the fifth. Both extend indefinitely and include numbers of dissonant notes. But they are commonly so faint, and play so unimportant a part in determining the quality of a tone, that we may safely disregard them, and treat each tone as made up of its fundamental and its first five overtones or undertones, or of both. This point I must touch upon later.

After dealing thus thoroughly with the minor chord, after showing conclusively that it is not merely a disturbed, unsatisfactory modification of a major chord, but is a harmonic phenomenon quite as justifiable and comprehensible from a rational point of view as the major chord itself, being, in fact, the exact reciprocal of it, von Oettingen turned his attention to the confused and confusing subject of the minor scale and the minor key. Every musician knows that the minor scale in actual use is not, as we might rationally expect it to be, the counterpart of the major in any way, except that the predominance of minor chords in it gives it a characteristic expression. The major key has a major chord for its Tonic, another for its Dominant or Over-fifth, and another for its Sub-dominant or Under-fifth. The minor key has a minor chord for its Tonic and Under-fifth and a major chord for its Over-fifth. It is not, therefore, a pure minor key as the major key is a pure major. It is a key predominantly minor, with a prominent major element. Hauptmann, with his acute harmonic sense, pointed out that there is in actual use a third key unacknowledged in our theoretical systems, the "Moll-dur" or "Minor-major" key, as he called it. It is a modified major key—a major key with a minor instead of a major chord for the sub dominant. It is, in fact, the exact counterpart or reciprocal of the minor key in common use. One is a major key with a minor under-fifth chord; the other a major key with a major over-fifth chord. If Hauptmann had gone one step further, he would have seen

that our present minor key is a "major-minor" or "dur-moll" key, modified from pure minor as the "moll-dur" is from pure major. But this conception could not be reached until the reciprocal relations of pure major and minor had been fairly recognized. Hauptmann was misled, as his predecessors had been, and as nearly every one continues to be, by the supposed necessity of an ascending leading note in the minor key. But von Oettingen soon saw that the consistent carrying out of the dual principle involved a descending leading note in pure minor. The major scale, constructed of the tones of a major tonic, Over-fifth and Under-fifth, $F-A-C-E-G-B-D$ is thus made up: $C-D-E-F-G-A-B-C$.

Von Oettingen proceeded to construct a pure minor scale, made up of the tones of a minor tonic, Over-fifth and Under-fifth, $B-D-F-A-C-E-B$. This scale turned out thus, reading downward instead of upward in the order of pitch: $C-B-A-G-F-E-D-C$. In the



order of tones and semitones, this scale is the exact counterpart in under-intervals of the major scale in over-intervals. So it is in its principal chords and its natural cadence formula. For, since it has a descending leading-note, the minor-fifth chord which contains this note is the natural chord to lead to the tonic at the close. So that whereas, in the major, the natural cadence-formula has the chords in the order 1. Under-fifth; 2. Over-fifth; 3. Tonic; in the pure minor the natural cadence-formula has the order 1. Over-fifth; 2. Under-fifth; 3. Tonic; thus:—

1. Pure major, made of a major Tonic, Over-fifth and Under-fifth, thus: $F-A-C-E-G-B-D$.
2. Mixed major (Hauptmann's "Moll-dur"), made up of a major Tonic and Over-fifth and a minor Under-fifth, thus:— $F-A-B-C-E-G-B-D$.

This key, though not acknowledged in current text-books of Harmony, is numerously exemplified in actual practice. Hauptmann points out that it occurs wherever the Diminished Seventh Chord resolves into the major Tonic. ("Natur der Harmonik und der Metrik," p. 40).

To give one example: the second subject of the first movement of Beethoven's Sonata, Op. 2, No. 1, is in the key of A2 major minor; i. e., it has a minor sub-dominant. This subject is made up of the Dominant Seventh Chord with an added minor 9th resolving into the major tonic. If the root were omitted, it would leave the diminished seventh chord, exactly the kind of case instanced by Hauptmann.

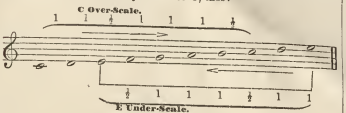
3. Pure minor, made up of a minor Tonic, Over-fifth and Under-fifth, thus:— $B-D-F-A-C-E-B$.

This key is neither acknowledged in current theory nor employed in the actual practice of composers. It is, however, rationally conceivable, and there is no apparent reason why it should not be added to the resources of musical expression.

4. Mixed minor, made up of a minor Tonic and Under-fifth and a major Over-fifth, thus:— $B-D-F-A-C-E-B$.

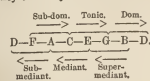
This is the minor key in common use.

Von Oettingen further called attention to the parallel relations between each major key and the pure minor key which begins on its third. The pure minor scale of B, for example, read downward, of course has every tone in common with the major scale of C, thus:—

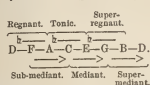


The chords of the two keys are also identical, thus:—

1. Chords of the key of C major:—



2. Chords of the key of E minor (pure):—



In these diagrams I have anticipated one point of later nomenclature which is to be attributed to Dr. Riemann, and have also used two new technical terms of von Oettingen's which need explanation. I have already called attention to the fact that, in pure minor, the under-fifth and not the over-fifth is the cadence-making chord, because it contains the descending leading-note. But the term "Dominant" has been so long exclusively borne by the over-fifth that a new term corresponding to it seemed to be needed to indicate the governing chord in pure minor. So von Oettingen invented the terms "Regnant" and "Super Regnant" for the Under-fifth and Over-fifth chords, respectively, in pure minor, as being the reciprocals of "Dominant" and "Sub-dominant" in pure major. Riemann further applied the terms "Mediant," "Sub-mediant," and "Super-mediant" to the chords beginning on the third of the Tonic, Under-fifth and Over-fifth, respectively, whether in pure major or minor.

In pure major, the three principal chords are major, and the three mediant chords are minor; and the three principal chords are minor, and the three mediant chords are major. These six chords are the only (consonant) ones that can be made from the scale itself.

In the case of parallel keys, the chords of the two keys are identical; the principal chords in the major key are the mediant chords in its parallel minor, and vice versa. The key relationship depends solely on their grouping and relation to a given chord as tonic. If the tonic is a major chord, the key is major; if the tonic is minor, the key is minor. In both cases the very same six chords are used. This is a point of great weight and importance. Let me emphasize it, and repeat that key depends not on the chords employed, but on their relation to the tonic chord. I shall have to recur to this further on.

Here we may dismiss von Oettingen for the present, and occupy ourselves with the ideas of still another distinguished theorist, Dr. Hugo Riemann, of Hamburg.

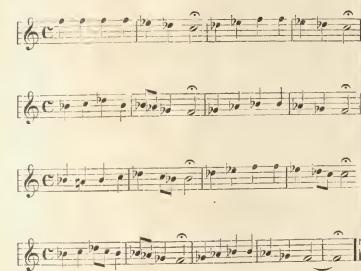
(C) Riemann's Theories.—Dr. Riemann was, and is, I believe, a professor in the Conservatory of Music, at Hamburg. Some ten years after von Oettingen's system of Harmony appeared, he began publishing a series of remarkable pamphlets on musical theory. These were all based on the work of Hauptmann, Helmholtz and von Oettingen, whose fundamental principles he accepted.

1. It had been objected to von Oettingen's theory of the minor chord that we do not actually hear the undertone series in complex tones as we do the overtone series; that they can be heard only when tones are strings or other sounding bodies free to vibrate in sympathy with given tones; that, consequently, the overtone series is ordinarily heard to the exclusion of the undertones, and that, even when the undertones are actually present, they are overborne by the overtone series. This struck Riemann as a weak point in the theory—it was a point, in fact, which Helmholtz refused to refrain from accepting von Oettingen's conclusions, and so he (Riemann) began to investigate this particular point. The result of his study seems to be that while it cannot be proved that the series of undertones is always present as an objective fact in the complex sound-wave which reaches the ear, and while it must be admitted that the undertone series, even when objectively present, is generally fainter than the overtone series which is also present at the same time, yet that Helmholtz's hypothesis regarding the functions of the nerve fibres in the ear makes it extremely probable that we do hear, in every tone, not only the overtones, but also the undertones, the combination, or resultant tones, both those resulting from the principal tones and also those resulting from the numerous combinations of overtones and undertones, and beside these the hosts resulting from the tones which are dissonant to each other. In short, he concluded that every tone we hear is not only complex, as Helmholtz's proved, but is much more complex than Helmholtz was aware of. The quality of the tone, as Helmholtz has already shown, depends on the relative proportions of the elements of which the complex tone is made up; only these are elements which Helmholtz did not take into account, that make the predominance of the undertone series some-

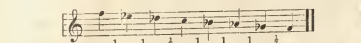
times possible, and that make the minor chord quite as satisfactory and justifiable a phenomenon as the major chord, instead of being, as Helmholtz imagined it, a disturbed major chord. Of course, this is difficult, and, perhaps, impossible, to verify; but so is Helmholtz's original hypothesis, of which this is merely a slight extension. At least, it is a good working hypothesis, and seems to have satisfied Riemann.

Riemann made some very thorough historical studies and wrote a history of Musical Notation. In the course of these researches he came upon some remarkable facts.

It had already been pointed out that the pure minor scale was identical with the Dorian, the favorite scale of the Greeks. Riemann discovered that the Greeks thought this scale downward, just as von Oettingen proposed to think it. At least their notation of it, using letters of the alphabet, just as we do, and reading them backward, would seem to point distinctly to that conclusion. Moreover, although the medieval theorists, who adopted this scale from the Greeks always thought it upward, yet some, at least, of their melodies began at the top of the scale and ended with the lowest note, using the descending leading note before the tonic. I give here a single example, the choral, "Christus, der uns selig macht" from 12 Bach chorals, published by Ditson & Co.

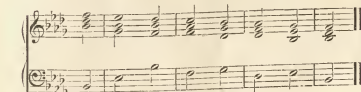


This choral is made from the following scale:



A pure minor or under-scale, beginning on F above and closing on F below, with a pure minor cadence. Bach's harmony is a different matter. He had not the least conception of pure minor harmony. His harmony is the church "Phrygian," as then understood.

The natural harmonizing of this scale would be as follows:



The medieval theorists not only misunderstood the Greek writers on whose works they sought to base their labors, but even misapplied their scale names, so that the Greek "Doric," for one example, became the church "Phrygian." In short, medieval theory is one maze of confusion. No wonder that it has taken so long to base our own theories on rational principles.

Riemann discovered, further, that the musical system of the Arabs and Persians was a pure minor system. They divided a string into twelve equal parts, and used one of these parts as a unit of measure. The other tones of the system were simple multiples of this, up to 12. This makes the simple undertone series, of which the minor chord is composed, the highest tone being the starting-point. He found these facts in the works of a Persian theorist dating at the end of the thirteenth and the begin-

ning of the fourteenth century of our era. (See Geschichte der Notenschrift, p. 77.)

Riemann found, also, that the conception of the dual relations of the major and minor chords was not new, even to Christian medieval theory. Zarlinio, an Italian theorist, published a work in 1558 in which he founded the minor chord on the under-tone series, using multiples of a string, just as the Arabs and Persians had done. He thus made it the reciprocal of the major chord, which he based on the over-tone series, using fractions of a string. Riemann satisfied himself that the reason why Zarlinio's ideas proved unfruitful and were consigned to oblivion was, that the "thorough-bass" system came into vogue just about that time, and that under this system it was impossible to think chords downward. The figured bass system was at that time a practical necessity. The system of musical notation was still so undeveloped that a score for an organist was impossible. His only resource was to put the four parts over each other, as they were noted in the hymn-books, and note over the bass part the intervals that the other parts made with it. He had to think his combinations of tones upward and not downward. So that the failure of Zarlinio's idea to make its way was due, not to anything irrational in the idea itself, but to an accident of history. The time was not yet ripe for it. For similar reasons, failure awaited the attempts of Tartini and Rameau to establish the same ideas some two centuries later. The truth seems to be that all these theories, of widely separated times and nationalities, discovered, each for himself, real natural facts and principles having a most important bearing on the relations of musical tones and chords. These discoveries came to nothing simply because the fullness of time had not yet come.*

Thoroughly convinced of the rationality of the dual conception of harmony and of the major and minor scales as well, Riemann set himself to solve the problems involved in bringing them into practical use. Von Oettingen has already done much in this direction. Riemann accepted much of his work, modified some of it, extended it a good deal, and worked it out into a practical system of harmony. This system included thinking chords, intervals, scales and keys downward as well as upward, making necessary changes in nomenclature, and adapting the rules for the progression of voices to the changed conditions. To go into all these matters in detail would involve a complete review of his whole system; and this could not be done within the limits required of this paper.

It must suffice here to point out some of our own relations to his work. To begin with, the problem of nomenclature is not quite the same for us as for German theorists. For example, the Germans know nothing of "major" and "minor" scales, keys and chords. They use the terms "dur" and "moll," "hard" and "soft," so that they can with less difficulty retain these terms when they have reversed their modes of thinking for the "moll" system. But our terms cannot reasonably be retained. If we are to look on a so-called "minor" chord, for example, as having a major third and perfect fifth just as a major chord has, only reckoning from the upper note instead of the lower one, the terms "major," which means "greater," and "minor," which means "less," are not rationally applicable. One third is neither greater nor less than the other. They are just alike, only one is an over-third and the other an under-third. Besides, if we are to reckon the chord C-A-B-F, for example, from C, its true point of unity, we can no longer call it the chord of F minor, nor can we call it the chord of C minor, for that would be both irrational and confusing. It is really the under-chord of C, just as C-E-G is the over-chord of C. The simplest way for us would seem to be to discard the terms "major" and "minor" altogether, and adopt the terms "over-scale" and "under-scale," "over-key" and "under-key," "over-interval" and "under-interval," "over-chord" and "under-chord."

I have only space to suggest one modification of the current rules for the progression of voices consequent on the new ideas. It is an accepted rule that the seventh in a chord is to descend one degree. But in the under-keys the seventh chords are reckoned downward, and their natural resolution is upward. Take, for example, the Regnant Seventh chord in E under-key; it will be resolved thus:—



This is only one of many changes needed.

Whether all this is practical or not is a question to be settled by experience. Those who are convinced of the rationality of the new conceptions, and those others who are not yet fairly convinced, but see enough probability in them to demand further consideration, can test the matter for themselves. I can say for myself that I became familiar with the new

* See "The Nature of Harmony," by Dr. Riemann. I have lately translated it, and it is published by Theodore Forster, of Philadelphia.

13. *Why the name and position of all the keys are known when seven are known.*—The names of any seven keys repeated in every octave in the same order and in the same position in regard to the black keys. Thus every key at the left of any group of two black keys is named

NEWS OF THE MONTH.

The height of the season, and music at a boiling point all over the civilized world; opera, oratorio and concert are being listened to as only muted people can listen; while many new works are being produced, the old still holds its own, and never grows stale by repetition.

In Europe, the season is unusually bright. Eugene d'Albert, the incomparable, has been winning triumphs in Australia, and recently played the Weber Concerto Stück, and the piano part of the "Bethoven Choral Fantasy," in Berlin. He will not visit us this season, unfortunately.

Joehring has been given in Florence, "Shades of Rossini!" They have revived Schumann's "Genoveva" at Dresden, but it will never be a success.

Louhrick is in Berlin. She is, in addition to being a world-famous violinist, also a fine pianist and violinist. Wilson is again on an extended concert tour.

Professor Kirlich, a well-known piano teacher and technical expert, chiefly known in this country by his edition of Tausig's "Studies," has been appointed chief teacher of piano forte at Stern's Conservatory, Berlin.

They have got as far as the "Vorspiel to Tristan and Isolde," in Paris, but it will be a long time before the Parisian public will regard with favor the most poetical, but decidedly Tautonic production, particularly as war rumors are in the air, and Wagner—well, Wagner—not exactly love France.

Francis Planitz played Mendelssohn's G minor piano-forte concerto at the second "Klindworth Concert" in Berlin.

Meyer Hellmann, the song composer, is also a baritone. Orin Maun, the violinist, has recently arranged his "Maiden's Song" for violin and piano; it is very pretty and graceful.

Verdi's new opera, "Otello," after many delays, is to be produced at La Scala, Milan, February 6th.

Helen Hopkirk has been playing successfully at Leipzig.

A monument is to be erected at Weimar to Liszt's memory. (Sandwich Island papers please copy all Liszt items.)

Scarbali has been elected as foreign correspondent to the Academy of Fine Arts, Paris.

Anna Beck, who never lost of heart since 1873, has been playing in Berlin.

Polish the pianist, one of Liszt's later pupils, is Court Pianist in Rome.

"Merlin" has also appeared in Vienna, as a New York success. It is decidedly spectacular.

The venerable Lechner, now seventy-eight years old, has resigned the post he has held for fifty-eight years, at the Conservatory, in favor of Alphonse Duvernoy, the son of the famous etude writer. Dear old man, how many girls' fingers he has trained to wack destruction on the ivory, in that time!

Clotilde Kuehn, who was once a child-widow, but now a rapidly-maturing artist, is playing in London.

Vladimir Pachmann gave a recital recently at the Sing Akademie, in Berlin.

Maria Krebs, the pianist, is reported to be engaged to the rising-master Breuninger, of Dresden. Now is a chance for the paragrapher.

D'Angi, the celebrated contralto, is dead.

The encore fire did not seem to be expressed at the Opera in Berlin.

Our young American violinist, Miss Nettie Carpenter, has been giving successful concerts with Planitz and Emerson, the son of the celebrated tenor—now in New York—in Berlin.

Dean Sauer is one of the rising pianist lights in Germany. He is highly spoken of.

Frank Kammel is giving a series of Chamber concerts and producing some new music in Berlin.

Brill, the pianist and composer of "Golden Cross," is busy composing fresh operatic work.

George Henschel, the vocalist, and now leader of a series of Symphony Concerts, has brought out Schubert's new (8th) symphony, which we are to have at Anton Seidl's next Symphonie Soiree, at Steinway Hall, New York.

Herr Henschel gave for the first time a new piano-forte concerto, by Hans Huber, played appreciatively by Agnes Zimmerman.

The monogram of Mozart is to be transferred to the gravestone where rest the remains of Beethoven and Schubert. What a glorious trio!

The undelivered symphony was religiously and musically observed in Leipzig.

They are still squabbling over poor Liszt's remains. The Prince of Wittgenstein has been interred at Buda-Pesth, but his daughter says he remains at Bayreuth.

At home we have not been a bit behind our transatlantic cousins. Madame King has returned from a very successful concert tour in the West, where she was fresh laurels. Miss Henrietta Schubert, the young mezzo

soprano, who accompanied her, greatly contributed to the success of the trip, and has a bright vocal future before her. Mr. N. Franks, of the well-known musical family of that name, has been playing in Kansas City.

Mr. G. B. Mills, after a long illness, will be heard in some piano recitals this season.

Mr. Sherwood has played recently in New York, and will give two recitals in February. He will also play through the West.

Dr. Louis Maas is doing good work in the West. The charming and delicate Tonia Maas is once more with us, after her successful season in South America.

Babel, the cow-boy pianist, has turned up again and threatened us with his cow-boy piano. Let dynamite be smeared on the keys; it will elevate his playing.

A bill is to be presented to the Ohio Legislature next month, asking that all music teachers in public schools and institutions supported by the State be required to pass an examination.

The bill is to be argued before the Ohio Legislature by William H. Dana, A. C. M., of Warren, Ohio.

Carl Wolfson is still before the public in Chicago. He is a scholarly pianist.

Mr. Jarvis is giving his recitals in Philadelphia. Anton Stredoz, who is becoming a popular composer, played recently in Detroit.

Joseffy has published two new compositions—a "Chanson sans Paroles" and a "Hungarian Canzonet."

Mr. Paul Tilden, a young pianist of Brooklyn, recently gave an excellent recital in New York.

Mr. William Lunt Wood, of New York, played a number of Moszkowski's newer compositions in an afternoon musical.

Mr. Henry Shradet's symphony concert, in Cincinnati, was a scholarly pianist. Miss Augusta Fisher was the pianist.

Miss Olga Radecki, a pianist, and probably the daughter of the famous violinist, played a long and difficult piano programme in Boston.

Mr. Sternberg, for whom we entertain the highest respect as a composer and a gentleman, played a Weber's Concert Stück on the anniversary of Weber's birthday, at Atlanta, Georgia, where Mr. Sternberg has recently gone.

Adolf Gies has been playing the Rohnstein Concerto in Baltimore, under Heilmann's baton.

Miss Porter and Mrs. Dow, who keep an excellent institution at Farmington, Conn., where Mr. Bernard Bookmann to direct their musical school, have given some very nice programmes this winter at their entertainments.

Miss Anna Ober has not disappointed the high expectations she raised at her recent appearances. She is a fine pianist. Her playing, while characterized by masculine force, breadth and brilliancy, not exactly as poetical as it might be. She does not play Chopin as well as who shall I say?—Miss Jessie Finney, one of Mason's pupils, and a player of no mean order.

Miss Cuy's music class, in Rochester, is still doing good work, as the programmes will testify.

San Francisco is also holding its end up in classical music.

The Boston Symphony Orchestra, under Gerike, will play in New York three times. There is much to be said as to how they will compare with the orchestras there.

Anton Seidl's second concert carried the town by storm. His rendition of Beethoven's 6th Symphony was unique and very dramatic, and telling the last movements being given gloriously. The "Leonore Overture" (3d) was faultless.

Every Seidl's visit to the Metropolitan, the season of which, I am sorry to say, is drawing to a close. It has been a wonderfully successful year.

At a recent concert at Steinway Hall, Miss Eleanor Garrigue made an auspicious debut, and won the recognition as a pianist of superior and scholarly attainments. Her solos, Menetto and Presto Beethoven, Op. 21, No. 6, and an album of her own compositions, revealed a large musical tone, an unimpeachable technique, and an excellent conception. Maud Maun played at the same concert, and played some good things.

Raff's Cavatina, in his well-known finished style.

The American Opera is having a great week in Washington, and is slowly making its way against the most discouraging odds: public and private lack of interest, and lack of funds; but Mrs. Thierher still game, and will fight till the death.

Francis Maun, such a trio as Josef Maun, and Mrs. Trehtar's, the amiable and cultivated wife of Mr. Charles Trehtar, of Steinway Hall. Mrs. Trehtar is a very energetic patron of music and musicians, and is under her management that our bright little contemporary *The Musical Times*, is conducted.

WHY IS THE TECHNIPHONE BETTER THAN THE PIANO FOR PIANO PRACTICE?

Because a correct touch is the first necessity, as well as the last accomplishment, in piano playing, and to the acquiring of a correct touch the Techniphone is the best instrument. It is the only instrument which has been herebefore been uncertain and arbitrary, varying with the player, and which has been herebefore been uncertain and arbitrary, varying with the player, and which has been herebefore been uncertain and arbitrary, varying with the player.

The work of learning the piano consists principally of the very different things—feeling the fingers and cultivating the ear. It is not mechanical, then, and so the two it is the mechanical part of piano technique—feeling the fingers and cultivating the ear. It is not mechanical, then, and so the two it is the mechanical part of piano technique—feeling the fingers and cultivating the ear.

The Techniphone asks: "Is a musical accomplishment necessary to the work of developing strength, suppleness and precision in fingers?" The Techniphone asks and answers the question. An accomplishment of tone, which is very often false, is a purely mechanical task, not only unnecessary, but is a positive hindrance, as it is in any kind of work. The Techniphone follows the rule of one thing at a time, of doing one musical work on a non-musical instrument. It shows one the way to the all-around perfection of the hand, and leaves nothing out of the equation, for the time being, to the single object of striking out on the keyboard, and the fingers trained to their utmost capacity of flexibility, dexterity, touch, strength of stroke and precision of execution. Without this the player is helpless for the fingers are his organs of speech, his sole means of expression. Kullak's greatest modern teachers, has said: "What lack of expression in the fingers have not first been made capable of expression?" It is in order to acquire mastery of fingers—the true art of the musician—that piano devotees turn to the arduous practice of every conceivable kind of finger exercise.

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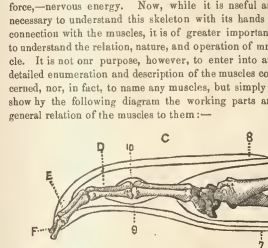
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[FOR THE ETUDE.] "FIRM BUT FLEXIBLE WRIST."

Piano students are, in many cases, puzzled by the oft-repeated remark about a "firm but yielding wrist." It does sound rather paradoxical, and not long ago a writer in *The Etude* scouted the idea, and characterized it as a method of a teacher of tone, who had been cited as making great use of it, by no very elegant title. It must be confessed that it is a badly abused, because little understood, idea. At least the underlying principle is little understood, and its proper application still less. But, nevertheless, it does stand for an important idea, which may be rationally explained. The following is an attempt to show the underlying principle and its application, and then assist the student in a more intelligent use of the machinery employed in piano-forte playing.

Mr. Frederick Clarke's work on "Die Lehre des einhelfenden Kunstmittels beim Clavierpiel" is the only technical treatise with which we are acquainted that gives a complete diagrammatic description of all the parts of the physical apparatus employed in playing. The majority of the works give a description of the hand, and leave out the real motive machinery—the muscles. The hand, and all the long structures of the fingers, hand, and arm, are only the skeleton framework. The real movers of this skeleton are the muscles acted upon by the motive force—nervous energy. Now, while it is useful and necessary to understand this skeleton with its hands of connection with the muscles, it is of greater importance to understand the relation, nature, and operation of muscle. It is not our purpose, however, to enter into any detailed enumeration and description of the muscles concerned, nor, in fact, to name any muscles, but simply to show by the following diagram the working parts and general relation of the muscles to them:—



Practically, we have here a number of elastic, but very tough strings, capable of sustaining a heavy weight, but possessed of an active power of contraction through nervous energy emanating from the seat of mental activity, so that, as the weight to be sustained increases, the tension of the strings may be increased to a degree sufficient to meet the exigencies of the case. String 2, for example, is capable of supporting, by its own tension, the weight of the forearm, hand and fingers. No distribution of active nervous energy to strings 4, 6, 8 and 10 is necessary. Nor would it be if we were to begin to pile weights upon the arm, or attempt to pull it down. As the weight or pull increased, the tension of the string 2 could increase in proper proportion. We say "could" because it does not follow that when the weights were added the tension of 2 would increase. And we also say "in proper proportion" because it does not follow that if tension increased it would do so in proper proportion.

Right here we have an important principle that lies at the back of this whole subject. Nervous energy is an emanation of the brain, and the manner of its distribution to the muscles is under the control of the brain. This mental control manifests itself in three ways: 1, distributive; 2, quantitative; 3, qualitative. The mind has the power, as far as the so-called voluntary muscular activities are concerned, of distributing nervous energy to this or that particular muscle or set of muscles, and of controlling the manner of its distribution. It is not our purpose, however, to enter into any detailed enumeration and description of the muscles concerned, nor, in fact, to name any muscles, but simply to show by the following diagram the working parts and general relation of the muscles to them:—

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THE ETUDE.

and intensity of nervous energy which it allows to go out from the brain. The engineer analogy holds good here also as an illustration. But still farther, there is a point of difference between the two. In the case of the kind of *qualitative* control, but still farther, there is a point of difference between the two. In the case of the kind of *qualitative* control, but still farther, there is a point of difference between the two. In the case of the kind of *qualitative* control, but still farther, there is a point of difference between the two.

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1. Preludes, 50 cts. 2. Romances in G (Beethoven), 50 cts. 3. Romances in F (Beethoven), 50 cts. 4. Romances in E-flat (Beethoven), 50 cts. 5. Air Variations and Two Short Fugues, Handel, 50 cts. 6. Little Fugue, Bach, 50 cts. 7. Little Fugue, Bach, 50 cts. 8. Little Fugue, Bach, 50 cts. 9. Little Fugue, Bach, 50 cts. 10. Little Fugue, Bach, 50 cts. 11. Little Fugue, Bach, 50 cts. 12. Little Fugue, Bach, 50 cts. 13. Little Fugue, Bach, 50 cts. 14. Little Fugue, Bach, 50 cts. 15. Little Fugue, Bach, 50 cts. 16. Little Fugue, Bach, 50 cts. 17. Little Fugue, Bach, 50 cts. 18. Little Fugue, Bach, 50 cts. 19. Little Fugue, Bach, 50 cts. 20. Little Fugue, Bach, 50 cts. 21. Little Fugue, Bach, 50 cts. 22. Little Fugue, Bach, 50 cts. 23. Little Fugue, Bach, 50 cts. 24. Little Fugue, Bach, 50 cts. 25. Little Fugue, Bach, 50 cts. 26. Little Fugue, Bach, 50 cts. 27. Little Fugue, Bach, 50 cts. 28. Little Fugue, Bach, 50 cts. 29. Little Fugue, Bach, 50 cts. 30. Little Fugue, Bach, 50 cts. 31. 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